

GBD PROFILE: KAZAKHSTAN

GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY 2010

The Global Burden of Disease Study 2010 (GBD 2010) is a collaborative project of nearly 500 researchers in 50 countries led by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. It is the largest systematic scientific effort in history to quantify levels and trends of health loss due to diseases, injuries, and risk factors. GBD serves as a global public good to inform evidence-based policymaking and health systems design.

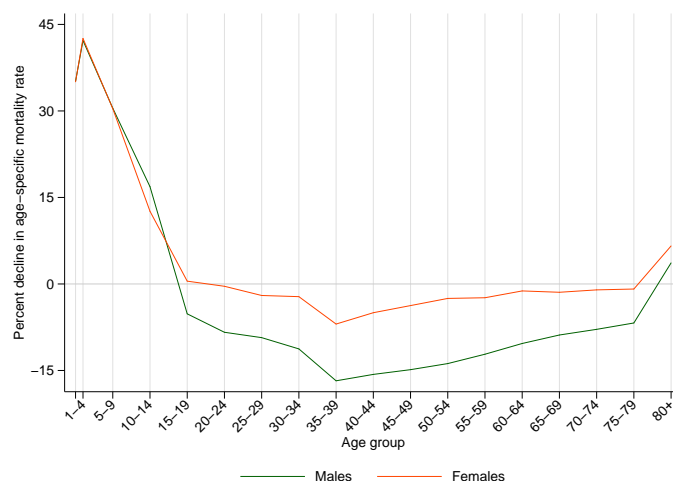
PROFILE OVERVIEW

- In terms of the number of years of life lost (YLLs) due to premature death in Kazakhstan, ischemic heart disease, cerebrovascular disease, and lower respiratory infections were the highest ranking causes in 2010.
- Of the 25 most important causes of burden, as measured by disability-adjusted life years (DALYs), lower respiratory infections showed the largest decrease, falling by 59% from 1990 to 2010.
- The leading risk factor in Kazakhstan is dietary risks.

ALL-CAUSE MORTALITY RATE

- This chart shows the change in mortality rate at every age range. The points above 0 on the chart indicate positive declines in the all-cause mortality rate, while points below 0 indicate an increase in mortality rate between 1990 and 2010.
- The greatest reductions in all-cause mortality rate were experienced by females aged 1-4 years (43%). Males aged 35-39 years saw the largest increase in mortality rate (17%).

Percent decline in age-specific mortality rate by sex from 1990-2010 in Kazakhstan



CAUSES OF PREMATURE DEATH

Years of life lost (YLLs) quantify premature mortality by weighting younger deaths more than older deaths.

Ranks for top 25 causes of YLLs 1990-2010, Kazakhstan

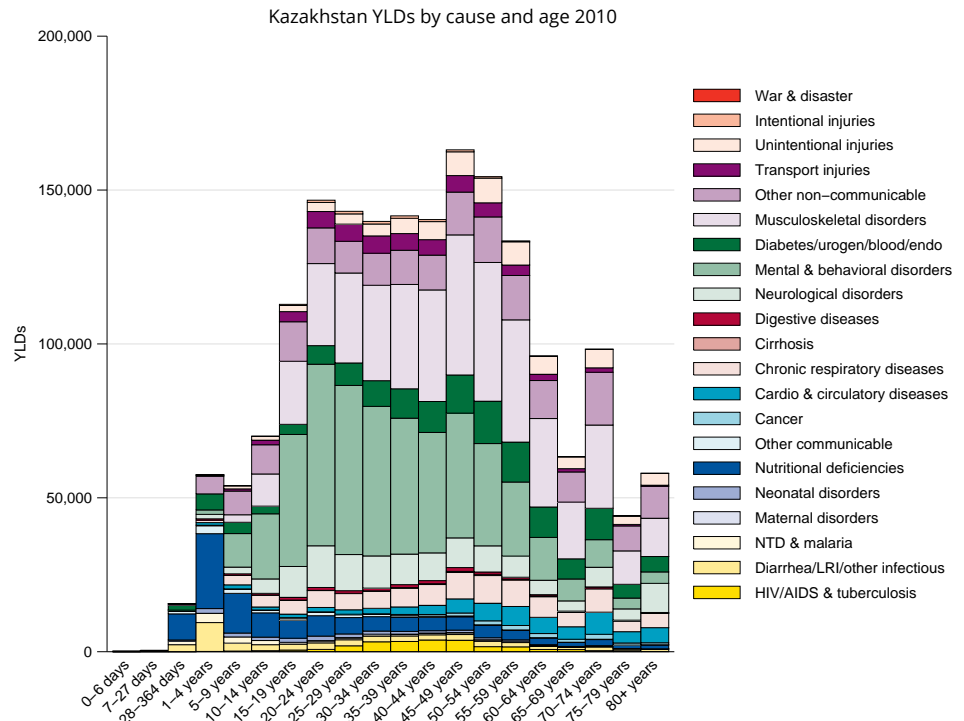
# YLLs in thousands (% of total)	Rank and disorder 1990	Rank and disorder 2010	# YLLs in thousands (% of total)	% change
631 (12.5%)	1 Lower respiratory infections	1 Ischemic heart disease	888 (18.6%)	46
615 (12.2%)	2 Ischemic heart disease	2 Stroke	445 (9.3%)	22
387 (7.7%)	3 Stroke	3 Lower respiratory infections	263 (5.5%)	-59
245 (4.9%)	4 Neonatal encephalopathy	4 Self-harm	243 (5.1%)	19
218 (4.3%)	5 Congenital anomalies	5 Congenital anomalies	204 (4.3%)	-2
197 (3.9%)	6 Road injury	6 Road injury	195 (4.1%)	-3
206 (4.1%)	7 Self-harm	7 Neonatal encephalopathy	193 (4.0%)	-21
193 (3.8%)	8 Preterm birth complications	8 Cirrhosis	159 (3.3%)	133
188 (3.7%)	9 Diarrheal diseases	9 Preterm birth complications	153 (3.2%)	-21
138 (2.7%)	10 Lung cancer	10 COPD	113 (2.4%)	-9
123 (2.5%)	11 COPD	11 Tuberculosis	108 (2.3%)	20
115 (2.3%)	12 Stomach cancer	12 Interpersonal violence	109 (2.3%)	0
109 (2.2%)	13 Drowning	13 Cardiomyopathy	104 (2.2%)	46
103 (2.1%)	14 Interpersonal violence	14 Lung cancer	104 (2.2%)	-33
97 (1.9%)	15 Tuberculosis	15 Drowning	83 (1.7%)	-24
89 (1.8%)	16 Poisonings	16 Stomach cancer	65 (1.4%)	-43
76 (1.5%)	17 Mechanical forces	17 Hypertensive heart disease	58 (1.2%)	59
77 (1.5%)	18 Cirrhosis	18 Poisonings	60 (1.3%)	-34
74 (1.5%)	19 Cardiomyopathy	19 Mechanical forces	53 (1.1%)	-30
58 (1.1%)	20 Esophageal cancer	20 Chronic kidney disease	48 (1.0%)	83
46 (0.9%)	21 Rheumatic heart disease	21 Colorectal cancer	45 (0.9%)	5
41 (0.8%)	22 Colorectal cancer	22 Breast cancer	44 (0.9%)	17
42 (0.8%)	23 Meningitis	23 Falls	36 (0.8%)	-1
38 (0.8%)	24 Leukemia	24 Esophageal cancer	37 (0.8%)	-39
38 (0.8%)	25 Breast cancer	25 Diabetes	35 (0.7%)	23
	26 Hypertensive heart disease	26 Diarrheal diseases		
	28 Falls	28 Leukemia		
	29 Diabetes	31 Rheumatic heart disease		
	32 Chronic kidney disease	35 Meningitis		

This chart shows the change in the top 25 causes of YLLs due to premature mortality from 1990 to 2010. Solid lines indicate a cause has moved up in rank or stayed the same. Broken lines indicate a cause has moved down in rank. The causes are color coded by blue for non-communicable diseases, green for injuries, and red for communicable, maternal, neonatal, and nutritional causes of death.

YEARS LIVED WITH DISABILITY (YLDs)

Years lived with disability (YLDs) are estimated by weighting the prevalence of different conditions based on severity. The top five leading causes of YLDs in Kazakhstan are low back pain, major depressive disorder, iron-deficiency anemia, neck pain, and chronic obstructive pulmonary disease.

The size of the colored portion in each bar represents the number of YLDs attributable to each cause. The height of each bar shows which age groups had the most YLDs in 2010. The causes are aggregated. For example, musculoskeletal disorders include low back pain and neck pain.

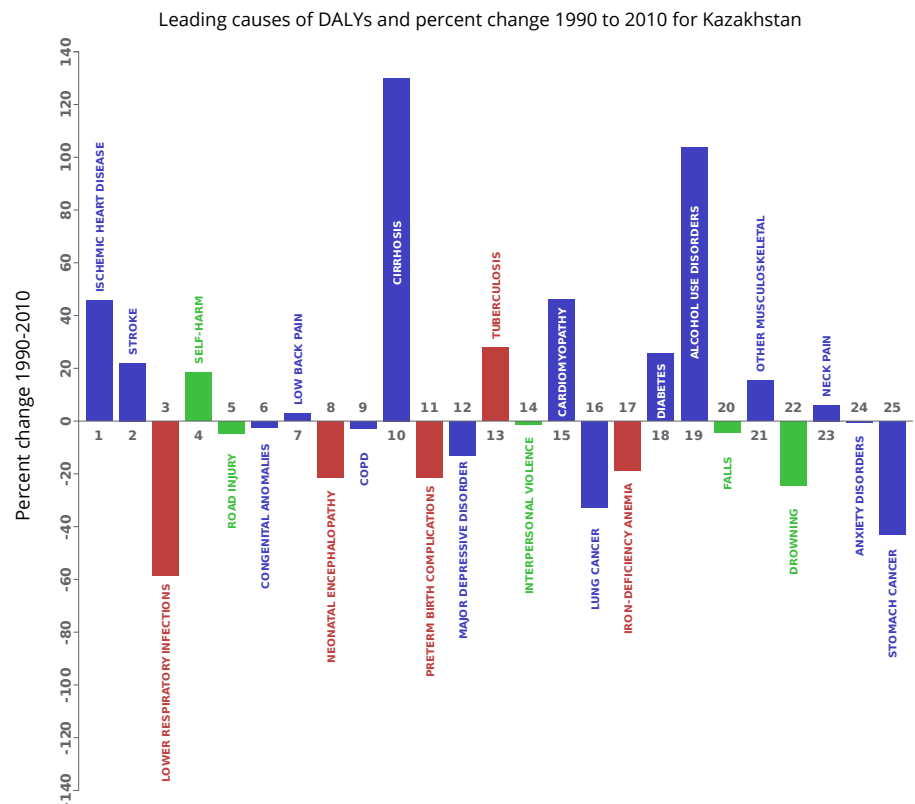


DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Disability-adjusted life years (DALYs) quantify both premature mortality (YLLs) and disability (YLDs) within a population. In Kazakhstan, the top three causes of DALYs in 2010 were ischemic heart disease, cerebrovascular disease, and lower respiratory infections. Two causes that appeared in the 10 leading causes of DALYs in 2010 and not 1990 were chronic obstructive pulmonary disease and cirrhosis of the liver.

The top 25 causes of DALYs are ranked from left to right in order of the number of DALYs they contributed in 2010. Bars going up show the percent by which DALYs have increased since 1990. Bars going down show the percent by which DALYs have decreased. Globally, non-communicable diseases and injuries are generally on the rise, while communicable, maternal, neonatal, and nutritional causes of DALYs are generally on the decline.

- Communicable, maternal, neonatal, and nutritional
- Non-communicable
- Injuries

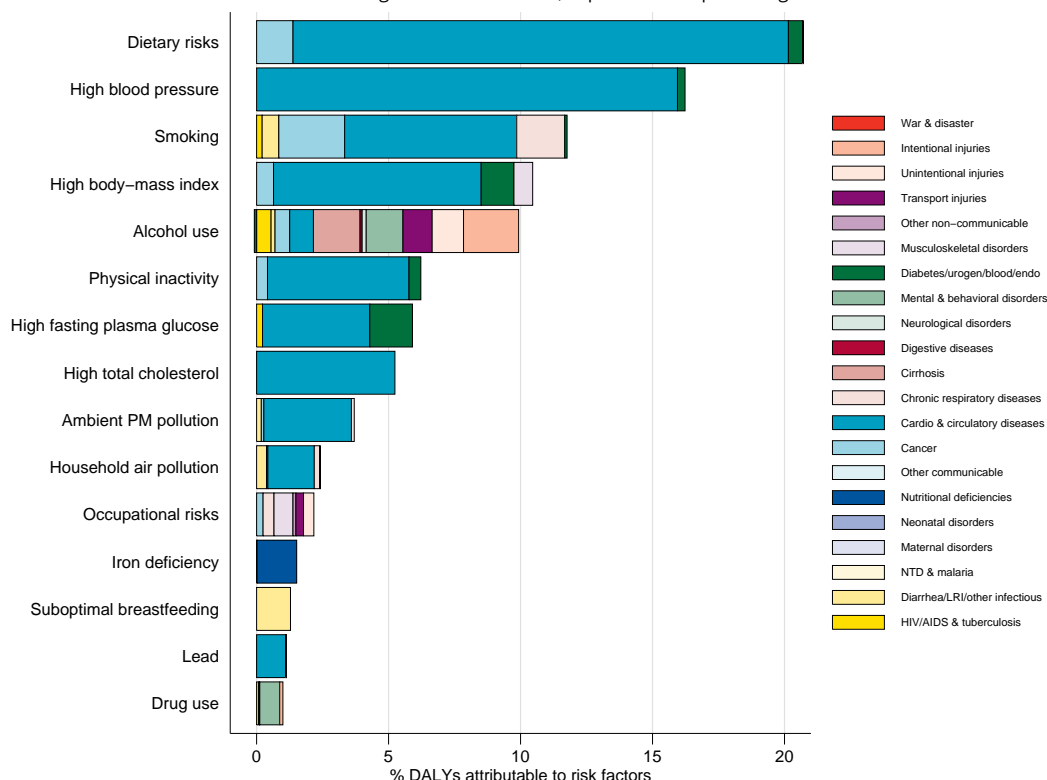


RISK FACTORS

Overall, the three risk factors that account for the most disease burden in Kazakhstan are dietary risks, high blood pressure, and tobacco smoking. The leading risk factors for children under 5 and adults aged 15-49 years were suboptimal breastfeeding and dietary risks, respectively, in 2010.

Burden of disease attributable to 15 leading risk factors in 2010, expressed as a percentage of Kazakhstan DALYs

The graph shows the top 15 risk factors for Kazakhstan. The colored portion of each bar represents the specific diseases attributable to that risk factor while bar size represents the percentage of DALYs linked to specific risk factors.



COUNTRY BENCHMARKING OF BURDEN OF DISEASE

Understanding the relative performance of Kazakhstan against other comparator countries provides key insight into public health successes and areas where Kazakhstan might be falling behind. The table identifies Kazakhstan's rank across 14 other comparator countries, selected and ordered by income per capita, for five metrics of interest, with 1 indicating the best rank and 15 indicating the worst rank.

- Age-standardized rates are used to make meaningful comparisons across time by adjusting for changes in population size and age structure.
- Life expectancy incorporates mortality, and health-adjusted life expectancy further incorporates years lived in less than ideal health.
- In 2010, Kazakhstan ranked 9th for age-standardized YLD rate and 14th for age-standardized death rate.

Age-standardized death rates, YLL rates, YLD rates, and life expectancy at birth and health-adjusted life expectancy at birth for 1990 and 2010, both sexes combined

Country	Age-standardized death rate (per 100,000)				Age-standardized YLL rate (per 100,000)				Age-standardized YLD rate (per 100,000)				Life expectancy at birth				Health-adjusted life expectancy at birth			
	1990		2010		1990		2010		1990		2010		1990		2010		1990		2010	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	LE	Rank	LE	Rank	HALE	Rank	HALE	Rank
Uruguay	731	5	585	4	18,332	4	13,126	3	11,007	2	10,540	1	73	4	76.5	4	63.8	3	67	2
Belarus	877	8	914	13	22,551	7	22,829	13	11,589	6	11,578	8	70.4	7	70	13	61.2	7	60.9	12
Bulgaria	864	7	747	10	20,104	6	16,486	6	10,860	1	11,095	6	71.4	6	73.5	10	62.5	6	64.1	7
Mauritius	1,014	13	766	11	24,451	9	17,273	9	11,333	4	10,953	3	68.9	10	73.2	11	60.3	9	63.9	8
Saint Lucia	891	9	722	9	25,875	10	17,785	11	13,328	15	14,233	15	68.9	11	73.7	9	58.6	12	61.6	11
Venezuela	716	4	630	5	19,688	5	17,271	8	11,583	5	10,994	4	72.6	5	74.5	5	62.8	5	64.9	5
Grenada	904	11	850	12	25,983	11	21,313	12	13,149	13	13,076	13	68.9	12	71	12	58.7	11	59.6	13
Kazakhstan	1,043	14	1,043	14	31,524	14	29,881	14	11,955	8	11,587	9	66.2	14	66.7	14	57.3	13	58.2	14
Costa Rica	556	1	462	1	13,705	1	10,447	1	11,672	7	10,948	2	76.6	1	79.4	1	66	1	68.9	1
Romania	895	10	712	8	23,494	8	16,325	5	11,261	3	11,043	5	69.9	8	73.8	8	60.9	8	64.4	6
Panama	634	2	545	2	16,812	2	14,027	4	12,186	10	11,151	7	74.5	2	76.7	3	63.9	2	66.5	3
Iran	934	12	640	6	29,033	13	16,780	7	13,288	14	13,076	12	67.5	13	74.4	6	57.2	14	63.2	10
Brazil	854	6	670	7	26,370	12	17,580	10	12,016	9	11,637	10	69.1	9	74.1	7	59.4	10	63.8	9
Serbia	698	3	572	3	16,985	3	12,077	2	12,440	11	11,833	11	73.7	3	76.7	2	63	4	66	4
South Africa	1,133	15	1,266	15	34,540	15	48,286	15	12,905	12	13,826	14	64.6	15	59.9	15	55.5	15	51	15

COUNTRY BENCHMARKING OF BURDEN OF DISEASE, CONTINUED

This figure shows the rank of Kazakhstan relative to the same comparator countries for the leading causes of DALYs in 1990 (top) and 2010 (bottom).

- The columns are ordered by the absolute number of DALYs in Kazakhstan for that particular year, with greatest burden on the left.
- The numbers indicate the rank across countries for each cause in terms of age-standardized DALY rates, with 1 as the best performance and 15 as the worst.

Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 1990																									
Country	Ischemic heart disease	Lower respiratory infections	Stroke	Road injury	Neonatal encephalopathy	Congenital anomalies	Diarrheal diseases	Self-harm	Low back pain	Preterm birth complications	COPD	Major depressive disorder	Lung cancer	Iron-deficiency anemia	Stomach cancer	Drowning	Interpersonal violence	Tuberculosis	Falls	Poisonings	Mechanical forces	Cirrhosis	Diabetes	Neck pain	Cardiomyopathy
Uruguay	5	4	4	4	7	9	5	10	4	8	4	4	14	5	8	5	5	4	9	6	13	5	6	15	10
Belarus	14	3	7	12	10	14	3	14	11	2	10	9	12	7	14	14	9	7	11	14	12	1	2	10	12
Bulgaria	11	9	15	6	3	10	2	11	13	1	9	1	10	3	11	3	3	2	14	9	5	8	7	13	4
Mauritius	15	8	14	3	8	1	7	12	1	12	12	7	4	1	3	2	1	3	5	2	1	14	15	2	5
Saint Lucia	3	10	8	10	13	5	9	7	3	15	8	8	2	15	6	12	10	10	6	10	6	13	14	4	9
Venezuela	7	7	2	13	9	3	13	8	8	11	2	11	8	8	10	4	13	9	8	5	9	10	11	7	6
Grenada	9	12	10	2	14	4	8	3	2	13	1	13	1	14	2	13	2	6	7	11	8	6	12	5	11
Kazakhstan	13	15	12	14	15	13	12	15	10	10	14	5	15	11	15	15	12	14	13	15	14	12	4	11	14
Costa Rica	1	2	1	5	4	11	6	6	7	4	3	10	3	4	13	6	8	5	3	3	4	9	3	6	3
Romania	10	14	13	9	2	12	4	9	12	3	13	2	11	6	9	10	4	12	15	12	10	15	1	12	8
Panama	2	5	3	8	6	8	11	5	6	5	6	14	5	9	7	11	11	13	2	4	7	4	8	3	2
Iran	12	6	5	15	1	15	10	1	15	9	7	15	6	12	12	9	7	8	10	13	11	3	5	1	1
Brazil	6	11	6	11	12	7	14	4	9	14	11	6	7	10	5	8	14	11	4	1	3	11	10	8	13
Serbia	8	1	11	7	5	6	1	13	14	6	5	12	13	2	4	1	6	1	12	7	2	2	9	9	7
South Africa	4	13	9	1	11	2	15	2	5	7	15	3	9	13	1	7	15	15	1	8	15	7	13	14	15
Ranking of leading age-standardized rates of disability-adjusted life years (DALYs) relative to comparator countries in 2010																									
Country	Ischemic heart disease	Stroke	Lower respiratory infections	Self-harm	Road injury	Congenital anomalies	Low back pain	Neonatal encephalopathy	COPD	Cirrhosis	Preterm birth complications	Major depressive disorder	Tuberculosis	Interpersonal violence	Cardiomyopathy	Lung cancer	Iron-deficiency anemia	Diabetes	Alcohol use disorders	Falls	Other musculoskeletal	Drowning	Neck pain	Anxiety disorders	Stomach cancer
Uruguay	5	4	4	13	3	4	4	3	10	4	5	8	4	6	8	10	3	4	7	7	14	4	15	10	7
Belarus	15	12	3	14	11	11	11	8	9	13	3	14	13	8	13	11	8	3	15	13	8	14	10	4	15
Bulgaria	13	14	10	10	7	7	13	4	13	7	4	6	6	1	11	12	5	6	2	14	4	2	13	3	11
Mauritius	10	8	6	6	1	8	1	7	11	12	10	11	1	2	4	5	1	15	10	6	2	3	2	2	2
Saint Lucia	3	7	9	3	10	6	2	13	2	6	15	2	7	11	7	2	14	13	11	9	7	12	3	9	6
Venezuela	7	2	7	9	13	9	6	10	5	9	9	10	9	15	2	9	7	11	4	4	11	7	4	12	8
Grenada	8	10	12	2	6	3	3	11	1	10	7	12	8	7	12	4	15	14	13	10	15	13	5	6	3
Kazakhstan	14	15	14	15	14	15	10	15	14	15	13	3	14	10	15	13	12	5	14	11	10	15	12	13	14
Costa Rica	2	1	2	8	5	10	7	5	4	8	6	9	3	9	5	1	4	1	9	3	12	6	6	7	13
Romania	11	13	13	11	8	5	14	1	8	14	1	4	11	3	9	14	6	2	8	15	3	9	11	1	10
Panama	4	3	8	7	9	13	8	9	3	3	8	7	12	12	3	6	10	10	3	2	9	11	7	8	9
Iran	12	5	5	4	15	14	15	6	6	1	11	15	5	5	1	3	11	8	1	8	1	5	1	14	12
Brazil	6	6	11	5	12	12	9	12	12	11	12	13	10	13	10	7	9	9	12	5	6	10	8	11	5
Serbia	9	11	1	12	4	1	12	2	7	2	2	1	2	4	6	15	2	7	6	12	5	1	9	15	4
South Africa	1	9	15	1	2	2	5	14	15	5	14	5	15	14	14	8	13	12	5	1	13	8	14	5	1
Ranking Legend	1 - 3			4 - 7			8 - 11			12 - 15															